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**Title :** Foraging ecology of northern Gulf of Maine balaenopterids as determined by stable isotope analysis

**Category :** Ecology

**Student :** Not Applicable

**Preferred Format :** Poster Presentation

**Abstract :** The productive waters of the Gulf of Maine are important feeding grounds for numerous species of cetacean; understanding the trophic dynamics of resident endangered cetacean species is a necessary step in successful conservation management of this region. Here we present the preliminary findings of a collaborative study that examines the foraging ecology of endangered balaenopterid species over a period of three years, across the entire Gulf of Maine, using stable isotope analysis (SIA). SIA examines consumer tissues for remnant chemical signatures of diet, recorded by the ratios of stable isotopes  $^{15}\text{N}$  and  $^{13}\text{C}$  to their more abundant forms. In this paper we specifically report on the analysis of a subset of crossbow biopsy samples taken in situ from fin (Balaenoptera physalus) and humpback (Megaptera novaeangliae) whales, as part of photo-identification studies conducted from 2000-2002 around Mount Desert Rock in the northern Gulf of Maine.

Although sympatric, and often sighted feeding in close proximity to each other, fin and humpback whales had significantly different  $\delta^{15}\text{N}$  ( $p < 0.0001$ ) values. Our data suggest that fin whales occupy a lower trophic niche, implying a more planktivorous diet selection. Geographically, humpback  $\delta^{13}\text{C}$  values differed by location ( $p = 0.0109$ ); fin whales showed no variation in  $\delta^{13}\text{C}$  when sampled over a similar range ( $p = 0.4774$ ). Such differences may be explained by differences in species-specific residency times; re-sighting data suggest that individual fin whales may range the entire sampled region within a day(s). In contrast, humpback whales tend to remain, and perhaps specialize, in one locale for weeks. Finally,  $\delta^{13}\text{C}$  values differed significantly between years for both species ( $p < 0.0001$ ). These differences appeared to be driven principally by depleted  $^{13}\text{C}$  values in 2002, which correlate with an unusual predominance of offshore krill in the Gulf of Maine.